Balloon Borne Frost-Point Hygrometer

Instrument: Balloon Borne Frost-Point Hygrometer
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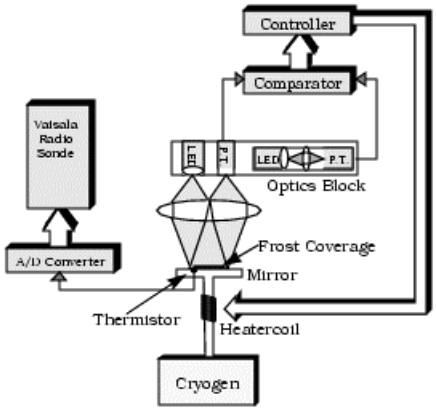
Measurement Description: The instrument is based on a chilled mirror principle and measures the temperature of a mirror which is controlled such that the mirror maintains a small and constant layer of frost coverage. Under these conditions the mirror temperature equals the frost point temperature of the air passing over the mirror. The frost coverage on the mirror is detected by a phototransistor which senses the light of a light-emitting diode reflected off the mirror surface. This signal is compared to a reference signal, thus eliminating the temperature drift of the elements. The error signal is then used to control the temperature of the mirror. The mirror temperature is measured using an individually calibrated bead thermistor. The mirror temperature is transmitted to the ground station using a Vaisala radiosonde, which also provides ambient temperature and pressure, and in the lower and middle troposphere relative humidity.

Platform:	Usually small rubber or plastic balloons
Accuracy:	10-15%
Response Time:	Depends on altitude, typically 15 sec
Size:	30 x 40 x 30 cm
Weight:	2.2 kg



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